

Appl. No. 10/055,352
Amendment and/or Response
Reply to Office action of 16 April 2004

Page 6 of 9

REMARKS / DISCUSSION OF ISSUES

Claims 1-14 are pending in the application.

The Examiner is respectfully requested to state whether the drawings are acceptable.

The claims are amended for non-statutory reasons, to correct one or more informalities, and particularly to ease the reading of the claims by removing redundant phrases. The claims are not narrowed in scope and no new matter is added.

The Office action rejects claims 1-14 under 35 U.S.C. 101. The applicants respectfully traverse this rejection.

The Office action asserts that the language of the claims raises a question as to whether the claim is directed merely to an abstract idea that is not tied to a technical art. The applicants respectfully traverse this assertion. The claims are drawn to a method of training a self ordering map. As is well known in the technical art of computer science and engineering, and consistent with the applicants' disclosure, a self ordering map is a type of neural network. As is also well known in the technical arts, neural networks are used in a variety of applications to solve problems that are difficult or impossible to solve using conventional analytical formulae. In order to use a neural network, the network must be trained. This invention presents an improved method of training a neural network, and the applicants respectfully maintain that this invention is a new and useful process that is tied directly to the technical art of computer science and engineering.

In the interest of advancing prosecution in this case, the applicants have amended independent claims 1 and 8 to specifically recite that the self ordering map is trained for use in a computing system. The applicants respectfully maintain, however, that this amendment adds no new matter to the claims and does not change the scope of the claims, because one of ordinary skill in the art would recognize that all neural networks are intended for use in computing systems.

BEST AVAILABLE COPY

Appl. No. 10/055,352
Amendment and/or Response
Reply to Office action of 16 April 2004

Page 7 of 9

The Office action further asserts that a random or pseudorandom function cannot be limited as claimed in claims 3, 4, 10, and 11. The applicants respectfully disagree with this assertion. A random or pseudorandom function can easily be configured to return random numbers within a given range of values, and the given range of values can be adjusted at any time. Claims 3 and 10 recite that the function that is used to select a learning rate for each training epoch has a range that decreases with the training epochs; this limitation can easily be applied to a random or pseudorandom function by merely adjusting the given range of values to the random or pseudorandom function in a decreasing fashion. In like manner, claims 4 and 11 recite that the function provides an output value that tends to decrease with the training epochs. Again, this limitation can easily be applied to a random or pseudorandom function by merely adjusting the upper bound on the given range of values to the random or pseudorandom function in a decreasing manner.

Because the applicants teach and claim a new and useful process for use in the technical arts, the applicants respectfully request the Examiner's reconsideration of the rejection of claims 1-14 under 35 U.S.C. 101.

The Office action rejects claims 1-14 under 35 U.S.C. 112, first paragraph. The applicants respectfully traverse this rejection.

The Office action bases this rejection on the above rejection under 35 U.S.C. 101, for allegedly teaching how to use a useless invention. The applicants respectfully disagree with this basis, based on the remarks above, and respectfully request the Examiner's reconsideration of the rejection of claims 1-14 under 35 U.S.C. 112, first paragraph.

The Office action rejects claims 3, 5, 10, and 12 under 35 U.S.C. 112, second paragraph, for use of the term "may range decreases". The applicants respectfully traverse this rejection.

The Office action quotes the above term out of context. The entirety of the phrase in the original claims is: "values over which said learning rate may range decreases". That is, the

BEST AVAILABLE COPY

Appl. No. 10/055,352
Amendment and/or Response
Reply to Office action of 16 April 2004

Page 8 of 9

verb phrase "may range" is associated with the values of the learning rate, and the verb "decreases" is associated with this range of values.

In the interest of advancing prosecution in this case, claims 3, 5, 10, and 12 are amended to effectively replace the phrase "values over which said learning rate may range" by a single reference to the range of the function that adjusts the learning rate. The applicants respectfully maintain that no new matter is added, and that the scope of the claims is not changed, because one of ordinary skill in the art will recognize that the "range of the function" that provides the learning rate is equivalent to the "values over which the learning rate may range".

Based on the remarks above, the applicants respectfully request the Examiner's reconsideration of the rejection of claims 3, 5, 10, and 12 under 35 U.S.C. 112, second paragraph.

The Office action rejects claims 1-14 under 35 U.S.C. 102(b) over Mehrotra ("Artificial Neural Networks", MIT Press, 1997). The applicants respectfully traverse this rejection.

In each of the applicants' independent claims 1-14, the applicants specifically recite that the function that provides the learning rate for the training epochs is other than a monotonically decreasing function. Mehrotra teaches the conventional use of a monotonically decreasing function, and thus does not teach the applicants' invention.

The Office action asserts that "monotonically decreasing means never remaining constant or increasing" (Office action, section 12, lines 10-11). The applicants respectfully note that this is an incorrect definition of a monotonically decreasing function. A monotonically decreasing function does not increase. There is no limitation in a monotonically decreasing function that it never remain the same. A conventional "staircase" function is a typical monotonic function (either increasing or decreasing, depending upon whether the stairs are leading up or down). Webster's New Collegiate Dictionary provides the following definition: "monotonic: ... having the property of never increasing or never decreasing as the independent variable increases".

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US020030 Amendment 4.416

Atty. Docket No. US020030

Appl. No. 10/055,352
Amendment and/or Response
Reply to Office action of 16 April 2004

Page 9 of 9

Because Mehrotra teaches a monotonically decreasing function for providing the learning rate for training a neural network, and the applicants specifically claim a function other than a monotonically decreasing function, the applicants respectfully request the Examiner's reconsideration of the rejection of claims 1-14 under 35 U.S.C. 102(b) over Mehrotra.

In view of the foregoing, the applicant respectfully requests that the Examiner withdraw the rejections of record, allow all the pending claims, and find the application to be in condition for allowance. If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted,



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US020030 Amendment 4.416

Atty. Docket No. **US020030**